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Adria Valley Anne Nelson
102 Dogwood Dr.
Tellico Plains, TN 37385

EXAMINER

GREENE, JASON M

ART UNIT PAPER NUMBER

1724

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/784,360

Applicant(s)

ELLIS ET AL.

Examiner

Jason M. Greene

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.84 (u)(1) because the different views are not numbered in consecutive Arabic numerals starting with 1. Specifically, the Examiner notes that Figs. 10-13 should be renumbered as Figs. 1-4, respectively. Additionally, appropriate changes should also be made to the brief description of the several views of the drawings for consistency.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference signs 33, 35, 37 and 39, as mentioned on page 14 of the specification. The Examiner suggests Applicants delete reference signs 33, 35, 37 and 39 from the listing of the Drawing Reference Numerals.

The drawings are objected to under 37 CFR 1.84 (h) because Figs. 10-13 contain center lines.

With regard to claim 13, it is unclear if the phrases "Fig. 13-A" through "Fig. 13-G" in Fig. 13 are intended to label the various process steps or if the phrases are intended to indicate that the various structures are shown in detail in separate drawings labeled as Figs. 13A – 13G. Since the drawings do not include Figs. 13A – 13G, the Examiner has assumed that the phrases are intended to label the various process steps. If this assumption is correct, the Examiner suggests Applicants either delete the phrases "Fig.

13-A" through "Figs. 13-G" or replace the phrases with the letters "A" through "G" to improve the clarity of the drawings. Additionally, appropriate changes should also be made to the detailed description for consistency

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The Examiner suggests Applicants change the title of the application to "Self Cleaning Air Filtration Machine And A Method For Using The Same" to more clearly indicate the invention to which the claims are directed.
3. The Examiner suggests Applicants delete the phrase "the step(s) of" bridging lines 5 and 6 of the abstract to improve readability. The examiner suggests Applicants insert a period after the word "chamber" in line 9 of the abstract to correct a minor grammatical informality.
4. The disclosure is objected to under 37 CFR 1.52 (b)(5) because the pages of the specification, including claims and abstract are not numbered consecutively, starting with 1, the numbers being centrally located above or preferably below, the text.

Appropriate correction is required.
5. The Examiner suggests Applicants rewrite the first paragraph under the section heading "Prior Technology" in narrative form instead of as a listing of the separate technologies to improve readability. Additionally, the Examiner notes that the second paragraph under the section heading "Prior Technology" is written as one long run-on sentence. Accordingly, the Examiner suggests Applicants rewrite the paragraph to improve readability.

Claims

6. With regard to claims 2-4 and 6-8, the Examiner suggests Applicants insert a period at the end of the claims to correct minor grammatical informalities.

7. With regard to claim 3, the Examiner suggests Applicants insert a comma between the words "belt" and "disk" in line 2 to improve the readability of the claim language.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claims 5-8 provides for a process of air filtration but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass.

12. Claims 5-8 are rejected under 35 U.S.C. 101 because the claimed recitation of a process, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101.

13. Claim 5 recites "A process for air filtration that is self cleaning comprising the steps of:" followed by the structural limitations of the device recited in claim 1. Therefore, claim 5 fails to recite the specific steps encompassed by the process. The Examiner notes, however, that claim 5 can be put into the form of a proper process claim by adding a limitation such as "passing an air stream to be filtered through a machine for air filtration comprising" after the phrase "A process for air filtration that is self cleaning comprising the steps of:". Additionally, claim 6 can be put into the form of proper process claims by replacing the phrase "further comprising the step(s) of" with a phrase such as "wherein the machine for air filtration further comprises". Similarly, claims 7 and 8 can be put into the form of proper process claims by replacing the phrase "further comprising" with a phrase such as "wherein the machine for air filtration further comprises".

14. Regarding claim 8, the phrase "a variety of feasible options" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "a variety of feasible options"), thereby rendering the scope of the claim(s) unascertainable. Specifically, it is not clear if the phrase "feasible options" is intended to encompass only the options recited in claim 6 or if the phrase is intended to encompass any and all options which could feasibly be incorporated into the air filtration machine. The Examiner suggests Applicants rewrite the first part of the claim as "A multiple step process for air filtration that is self cleaning as claimed in claim 6".

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleisher in view of Hirose, Hasama et al., and Gadgil et al.

With regard to claims 1 and 2, Fleisher discloses a self cleaning machine for air filtration comprising a filter comprising perforated motor (57) driven disks (42,43), a spray bar (59) and a supply line (60), a wet tank (18), a water fill port (19), a liquid level

sensor (float 20), a liquid and sediment drain port (53), and a power source (not shown, connected to motor 57) in Figs. 1, 2, and 6-8 and col. 2, line 46 to col. 4, line 69.

Fleisher does not disclose the air filtration machine comprising a recirculation pump, an ultrasonic or subsonic transducer, or ultraviolet submersible bulbs.

Hirose discloses a similar air filtration machine comprising a recirculation pump (107) and a supply line (115) for providing liquid to the spray bar (108) from the wet tank (106) in Fig. 1 and col. 2, lines 44-63.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the recirculation pump and supply line of Hirose into the air filtration machine of Fleisher to allow liquid to be provided from the wet tank to the spray bar to eliminate the need for a separate liquid source, as suggested by Hirose in Fig. 1 and col. 2, lines 44-63.

Hasama et al. discloses a similar air filtration machine comprising an ultrasonic transducer (50) for cleaning a rotating filter belt (33) immersed in a wet tank (22) in Fig. 2 and col. 13, lines 51-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultrasonic transducer of Hasama et al. into the air filtration machine of Fleisher to provide for enhanced cleaning of the rotating filter disks, as suggested by Hasama et al. in col. 13, lines 51-64.

While Fleisher and Hasama et al. do not disclose the transducer being a subsonic transducer, one of ordinary skill in the art at the time the invention was made would have recognized that a subsonic transducer could have been used in place of or

in addition to the ultrasonic transducers in situations where vibrations having a lower frequency are required to provide optimum cleaning of the filter disks, as is well known in the art. In other words, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the appropriate vibration frequency to provide optimum cleaning of the filter disks.

Gadgil et al. discloses providing an ultraviolet submersible bulb (28) in a tank of water (10) to provide disinfection in Fig. 1A and col. 4, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultraviolet submersible bulb of Gadgil et al. into the air filtration machine of Fleisher to kill any microorganisms present in the wet tank, as suggested by Gadgil et al. in col. 4, lines 55-65.

While Gadgil et al. only teaches providing a single UV bulb, one of ordinary skill in the art would have recognized that several bulbs could be used to allow for continued disinfection in the event that one of the bulbs fail, as is well known in the art.

With regard to claim 4, Fleisher discloses the air filtration machine further comprising a chemical injection port (77) on the wet tank for adding triethylene glycol in Figs. 2 and 3 and col. 5, line 51 to col. 6, line 25.

17. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleisher, Hirose, Hasama et al., and Gadgil et al. as applied to claim 1 above, and further in view of Alliger.

Fleisher, Hirose, Hasama et al., and Gadgil et al. do not disclose the rotating disks comprising a treated surface.

Alliger discloses a similar metallic filter having a treated surface comprising a synthetic plastic coating in Fig. 1 and col. 3, lines 31-37.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the plastic coating of Alliger into the metallic filter disks of Fleisher, Hirose, Hasama et al., and Gadgil et al. to prevent corrosion of the filter disks, as suggested by Alliger in col. 3, lines 31-37.

18. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleisher in view of Hirose, Hasama et al., and Gadgil et al.

With regard to claim 5, Fleisher discloses a process for air filtration comprising the step of passing an air stream to be filtered through a self cleaning machine for air filtration comprising a filter comprising perforated motor (57) driven disks (42,43), a spray bar (59) and a supply line (60), a wet tank (18), a water fill port (19), a liquid level sensor (float 20), a liquid and sediment drain port (53), and a power source (not shown, connected to motor 57) in Figs. 1, 2, and 6-8 and col. 2, line 46 to col. 4, line 69.

Fleisher does not disclose the air filtration machine comprising a recirculation pump, an ultrasonic transducer, or ultraviolet submersible bulbs.

Hirose discloses a similar air filtration machine comprising a recirculation pump (107) and a supply line (115) for providing liquid to the spray bar (108) from the wet tank (106) in Fig. 1 and col. 2, lines 44-63.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the recirculation pump and supply line of Hirose into the air filtration machine of Fleisher to allow liquid to be provided from the wet tank to the spray bar to eliminate the need for a separate liquid source, as suggested by Hirose in Fig. 1 and col. 2, lines 44-63.

Hasama et al. discloses a similar air filtration machine comprising an ultrasonic transducer (50) for cleaning a rotating filter belt (33) immersed in a wet tank (22) in Fig. 2 and col. 13, lines 51-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultrasonic transducer of Hasama et al. into the air filtration machine of Fleisher to provide for enhanced cleaning of the rotating filter disks, as suggested by Hasama et al. in col. 13, lines 51-64.

Gadgil et al. discloses providing an ultraviolet submersible bulb (28) in a tank of water (10) to provide disinfection in Fig. 1A and col. 4, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultraviolet submersible bulb of Gadgil et al. into the air filtration machine of Fleisher to kill any microorganisms present in the wet tank, as suggested by Gadgil et al. in col. 4, lines 55-65.

While Gadgil et al. only teaches providing a single UV bulb, one of ordinary skill in the art would have recognized that several bulbs could be used to allow for continued disinfection in the event that one of the bulbs fail, as is well known in the art.

With regard to claim 8, Fleisher discloses the air filtration machine further comprising an inline dryer assembly (mist eliminator 40 and heater 41) in Fig. 1 and col. 5, lines 3-34. The Examiner notes that the mist eliminator and heater are seen as forming a dryer assembly since the mist eliminator will remove any entrained liquid droplets while the heater will decrease the relative humidity of the air stream.

19. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleisher, Hirose, Hasama et al., and Gadgil et al. as applied to claim 5 above, and further in view of Petersen, Berry, and Deibert.

With regard to claim 6, Fleisher, Hirose, Hasama et al., and Gadgil et al. do not disclose the air filtration machine comprising an air diffuser, a toxic and noxious gas and radiation detection and recognition system with automatic safety shut down and audible and visual alarms, or an ultraviolet saturation chamber.

Petersen discloses an air filtration machine comprising an air diffuser (18) in Fig. 1 and col. 2, lines 6-19.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the air diffuser of Petersen into the air filtration

process of Fleisher to provide improved air distribution and to prevent large debris from entering the air filtration machine, as is well known in the art.

Berry discloses a similar air filtration process wherein the air filtration machine comprises a toxic and noxious gas and radiation detection and recognition system with automatic safety shut down (shut down of ventilation and air conditioning systems) and audible (voice chip announcements and the series of beeps) and visual alarms (yellow, blue, and green flashes) in Figs. 1-3 and col. 3, line 8 to col. 7, line 24.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the toxic and noxious gas and radiation detection and recognition system of Berry into the process of Fleisher to prevent chemical, biological, and nuclear agents from being introduced by the air conditioner, as suggested by Berry in col. 1, line 45 to col. 2, line 46.

Deibert discloses a similar air filtration process wherein the air filtration machine comprises an ultraviolet saturation chamber (14) in Figs. 1-3 and col. 2, lines 47-60.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultraviolet saturation chamber of Deibert into the air filtration process of Fleisher to kill any bacteria present in the air stream to be filtered, as suggested by Deibert in col. 2, lines 46-50.

With regard to claim 7, Fleisher, Hirose, Hasama et al., Gadgil et al., Petersen, Berry, and Deibert do not disclose the air filtration machine further comprising a

secondary wet filter, a secondary air diffuser, or a secondary ultraviolet saturation chamber.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate the wet filter, air diffuser, and ultraviolet saturation chamber of Fleisher, Hirose, Hasama et al., Gadgil et al., Petersen, Berry, and Deibert to provide additional filtration and bacteria suppression in environments having heavily contaminated ambient air. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate the wet filter, air diffuser, and ultraviolet saturation chamber of Fleisher, Hirose, Hasama et al., Gadgil et al., Petersen, Berry, and Deibert in that duplication of parts for a multiplied effect is merely a choice of design. See *St. Regis Paper Co. v. Bemis Co., Inc.*, 193 USPQ 8, 11.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Young, Himes et al., Gorbulsky, Coughlin, and Ellner references disclose similar air filtration machines and processes for their use.

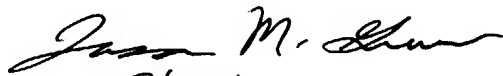
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Greene
Examiner
Art Unit 1724


9/30/04

jmg
September 30, 2004